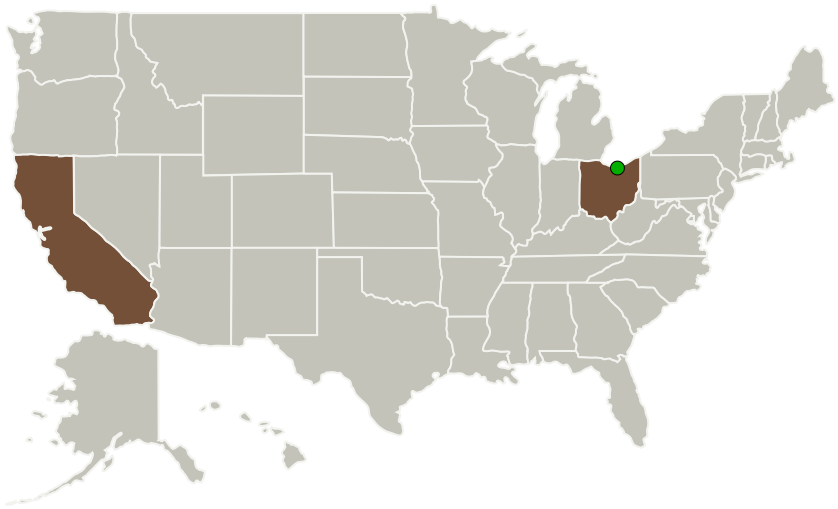
Safety via Thermal Shutdown for Space Rated Batteries, Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

Li-ion battery safety has inspired many safety features from CID, to safety valves. However, none of the current features protect a battery from internal over-current, which can be caused by foreign material contamination, dendrite formation, defects in separator or high impact on the battery. Another problem is that these devices shut-down the function of the entire battery, even when the problem arises from a localized spot. The entire battery shutdown is costly, especially when the battery size increases. Space batteries are especially of concern because of long mission life and large battery size. Quallion is interested in using a novel material developed by UCSB as a means to accomplish a battery which eliminates short circuits via a thermal trigger; this material could be used to develop safe, high-energy high energy, long life li-ion space rated batteries.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Quallion, LLC	Lead Organization	Industry	Sylmar, California
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

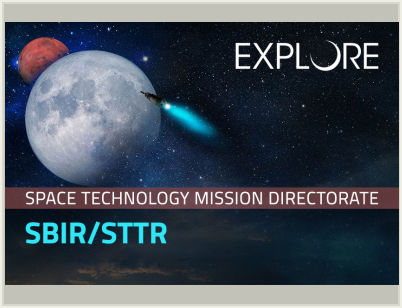


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Table of Contents

Safety via Thermal Shutdown for Space Rated Batteries, Phase I

Completed Technology Project (2010 - 2010)

Primary U.S. Work Locations	
California	Ohio

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139425)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Quallion, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

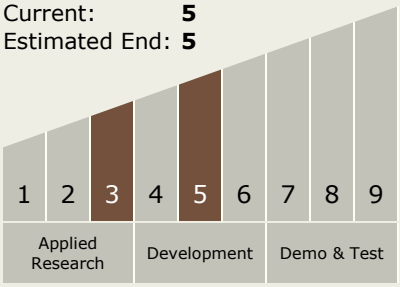
Carlos Torrez

Principal Investigator:

Hisashi Tsukamoto

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.2 Energy Storage
    - TX03.2.1 Electrochemical: Batteries

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System